

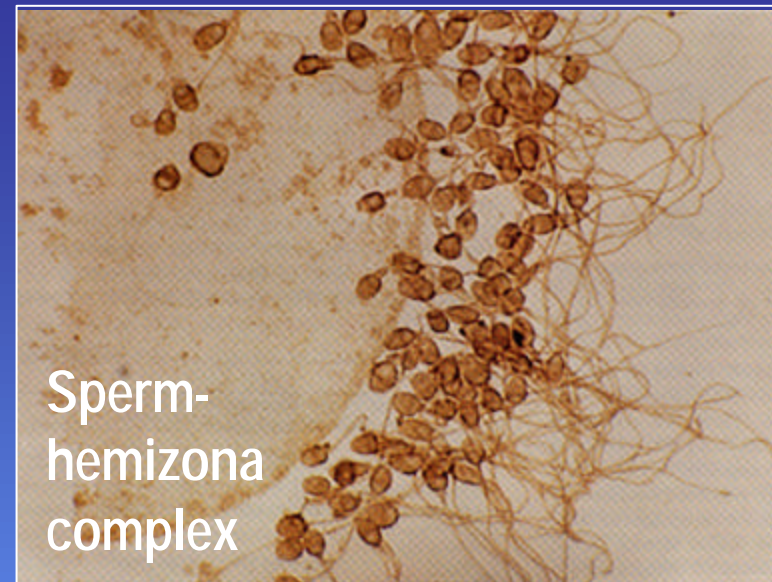
Sperm Maturity and Genetic Integrity: ICSI Sperm Selection by Hyaluronic Acid Binding

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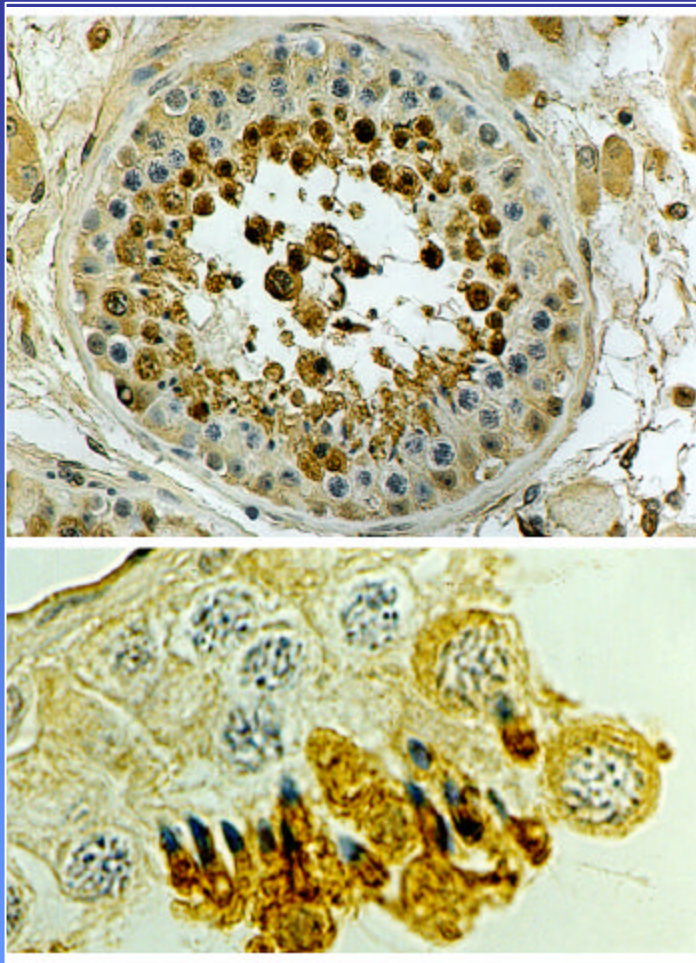
Huszar and Vigue, 1993



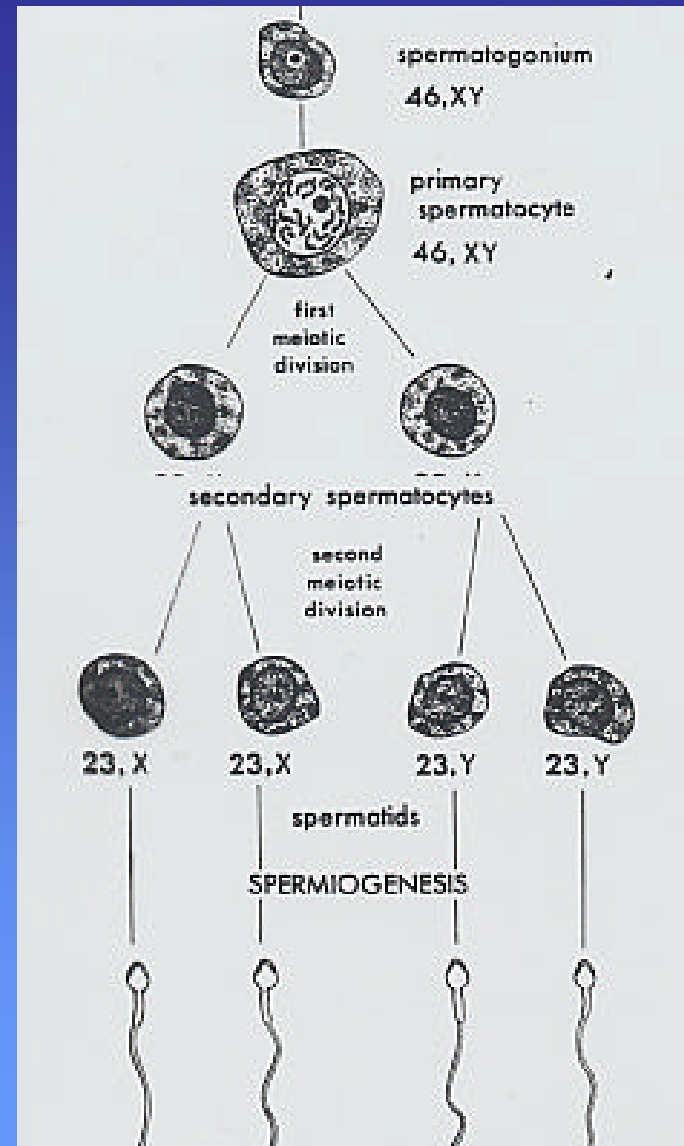
Only the clear headed mature sperm without cytoplasmic retention, which have completed the plasma membrane remodeling step, were able to bind to the zona

Huszar et al., Mol Reprod Dev 1993; Fertil Steril, 1994; BOR, 1997

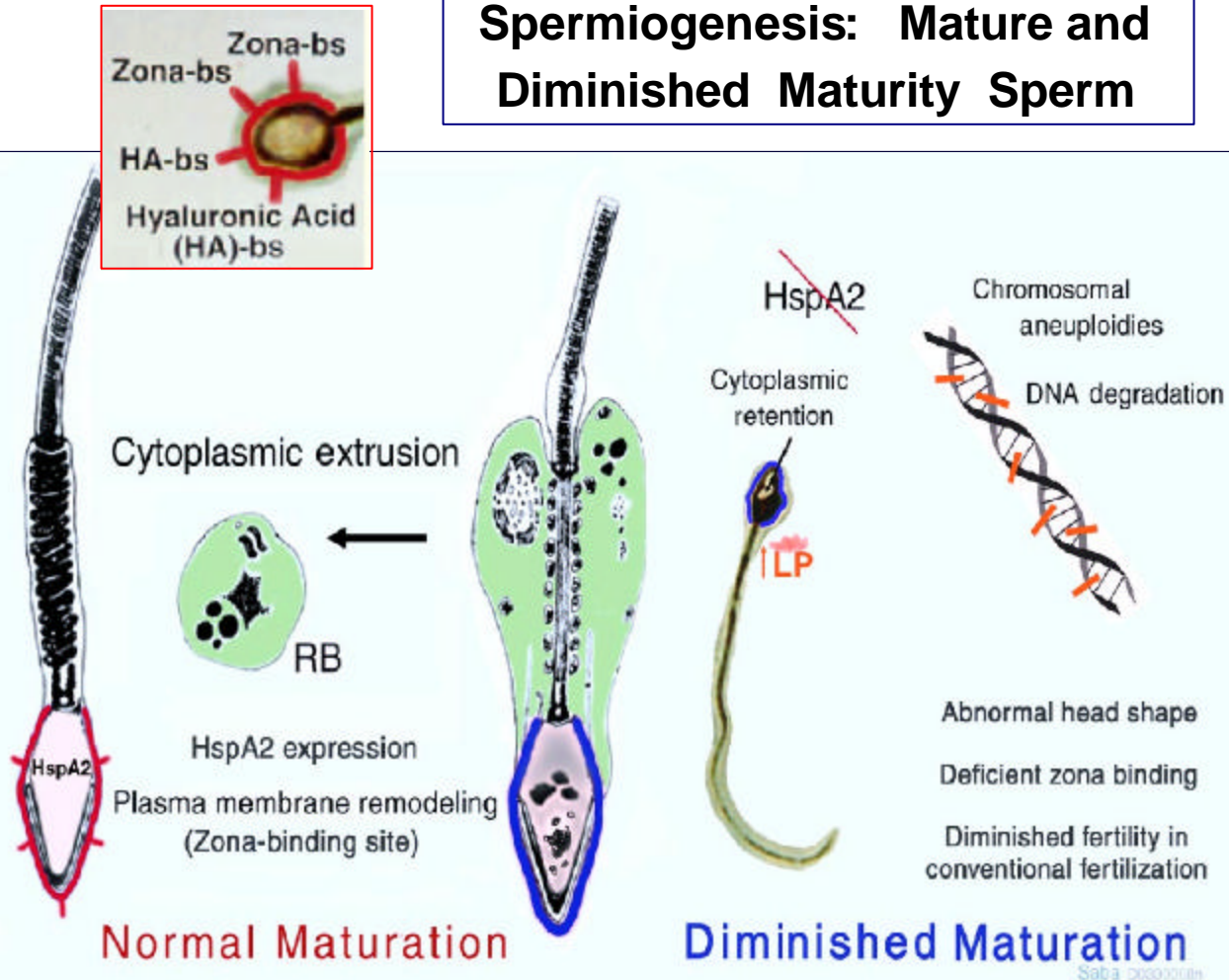
Testis tissue HspA2 immunostaining



Huszar et al, BOR, 2000

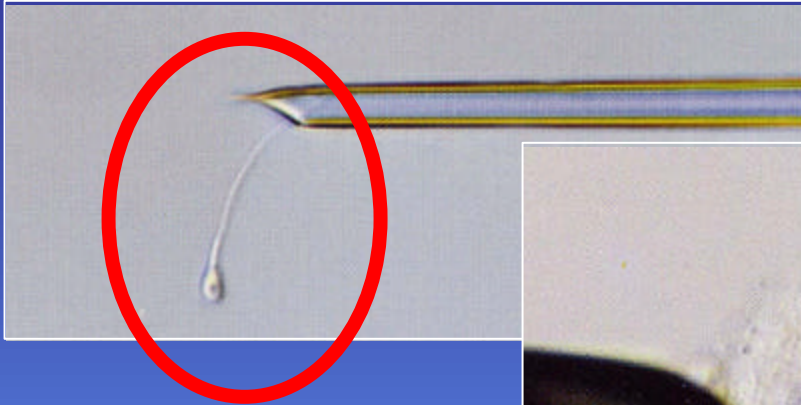


Spermiogenesis: Mature and Diminished Maturity Sperm

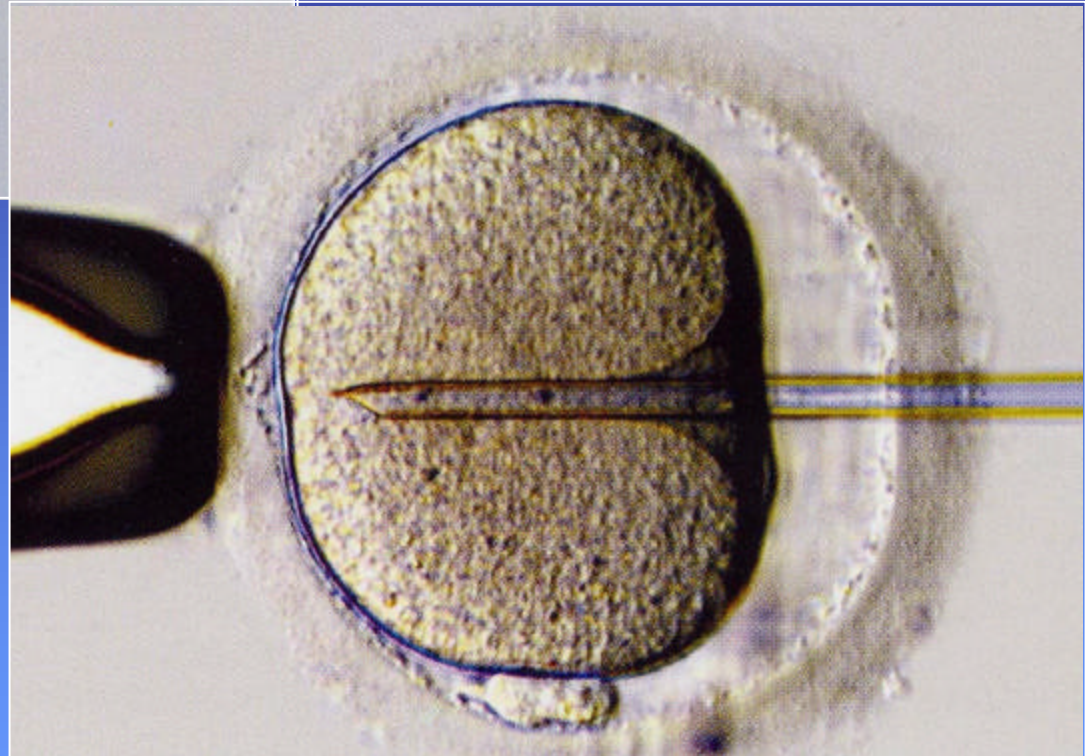


Huszar et al. BOR, 2000

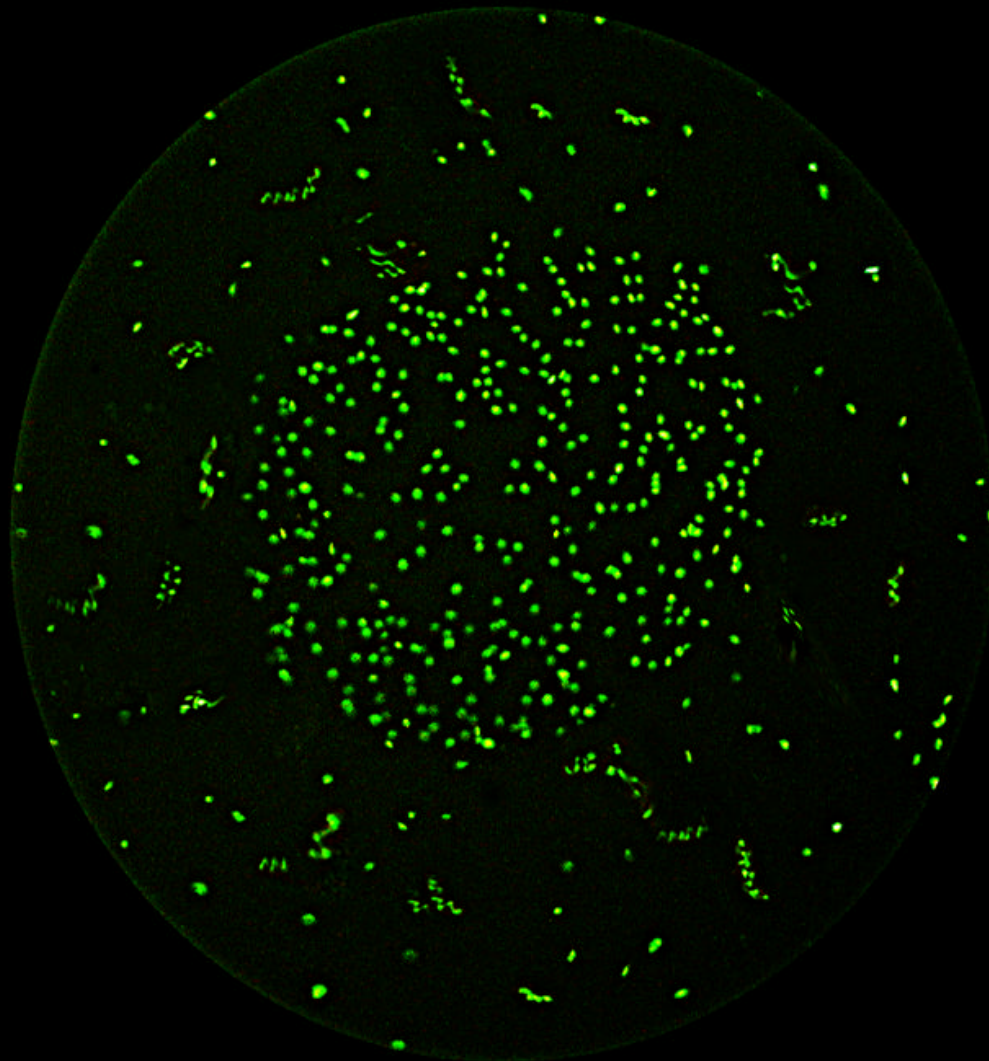
ICSI



> 6-20% genetic risk,
depending on the men

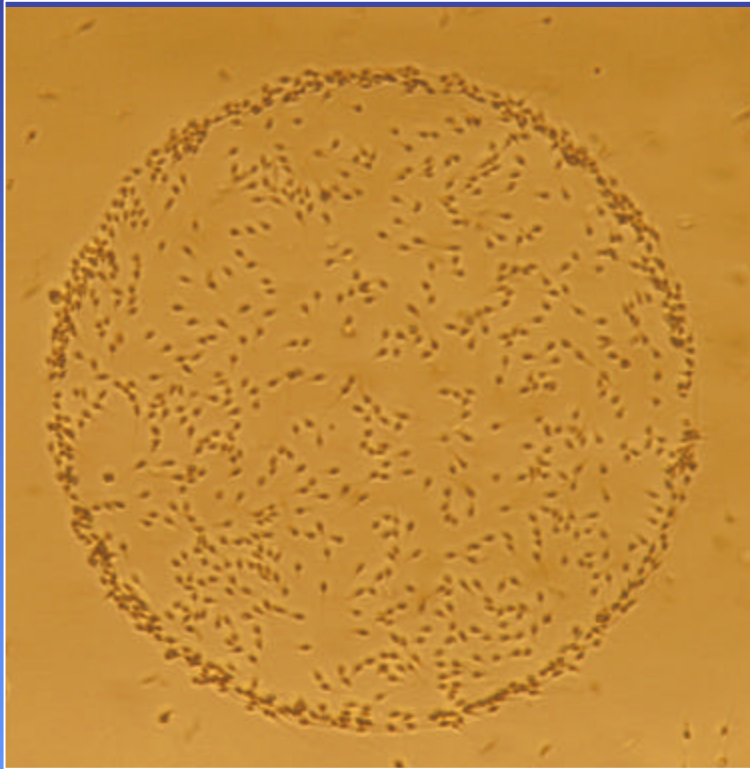


Basis of concerns related to ICSI: Due to the low levels of HspA2 in the meiotic synaptonemal complex diminished sperm maturity is associated with numerical chromosomal aberrations and diminished sperm DNA integrity.



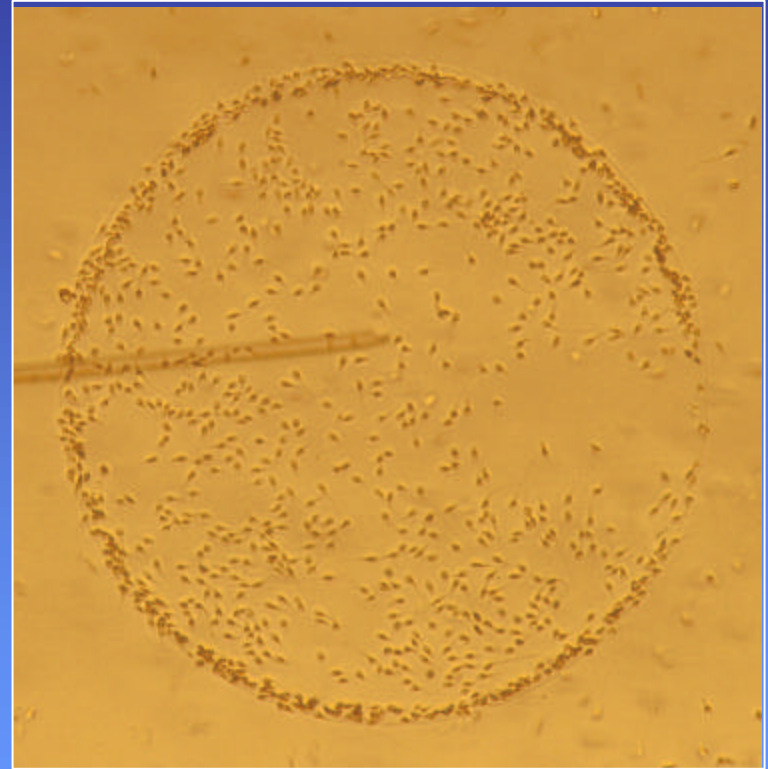
HA-coated petri dish spot

Sperm selection by membrane properties (binding to solid HA)



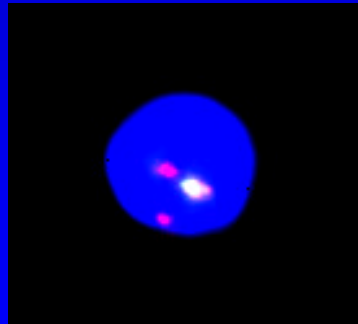
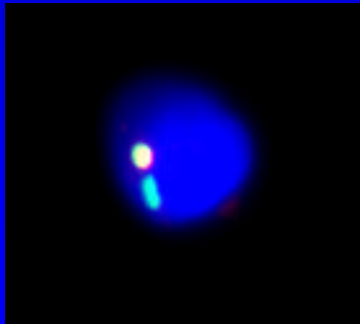
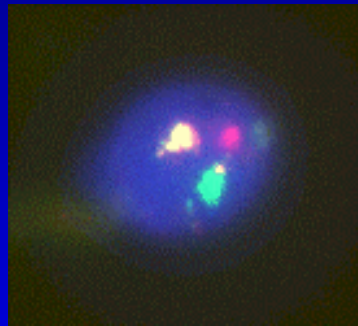
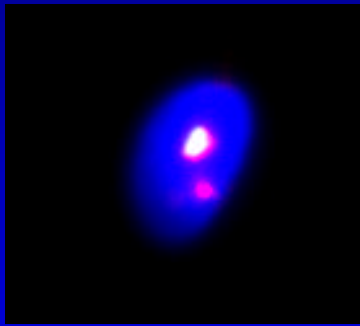
Washed sperm placed near
solid HA spot bonded to Petri
dish in HTF.

Incubation, room
temp., 10 min



Collect bound sperm with ICSI
micropipette

Multicolor FISH on decondensed sperm nuclei (centromer probes X, Y and 17)



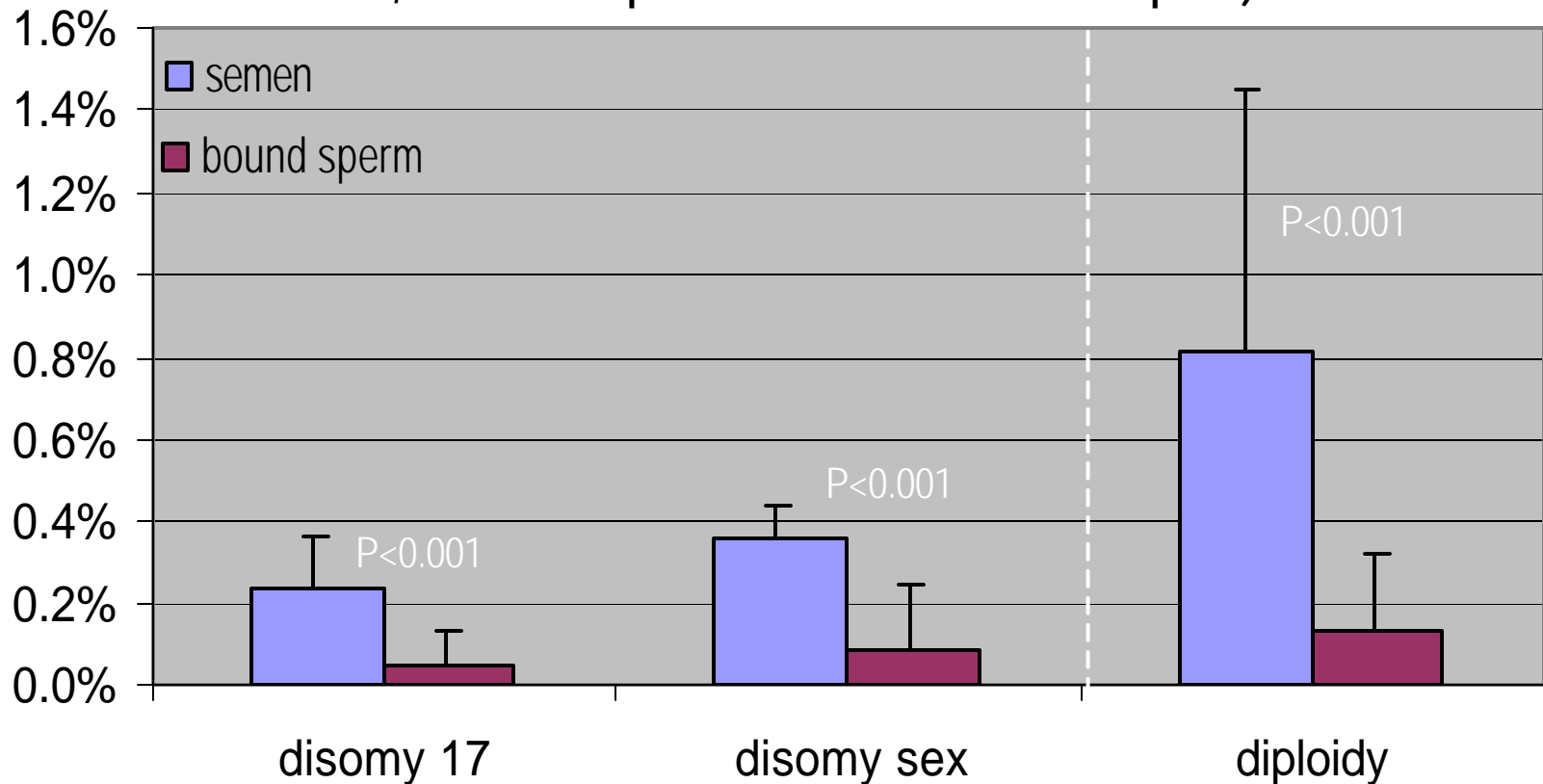
Normal

Disomies

Diploidies

Disomy and diploidy frequencies in the semen and HA-bound sperm fractions

(12 moderately oligospermic men, sperm conc. 20.6 M/ml,
N= 49,910 semen sperm and 9036 HA selected sperm)



Disomy and diploidy frequencies in sperm fractions after gradient treatment and subsequent HA selection

(12 normospermic IVF husbands, mean sperm conc. 118 M/ml,
N=52,708 gradient treated initial and 11,457 HA selected sperm)

